



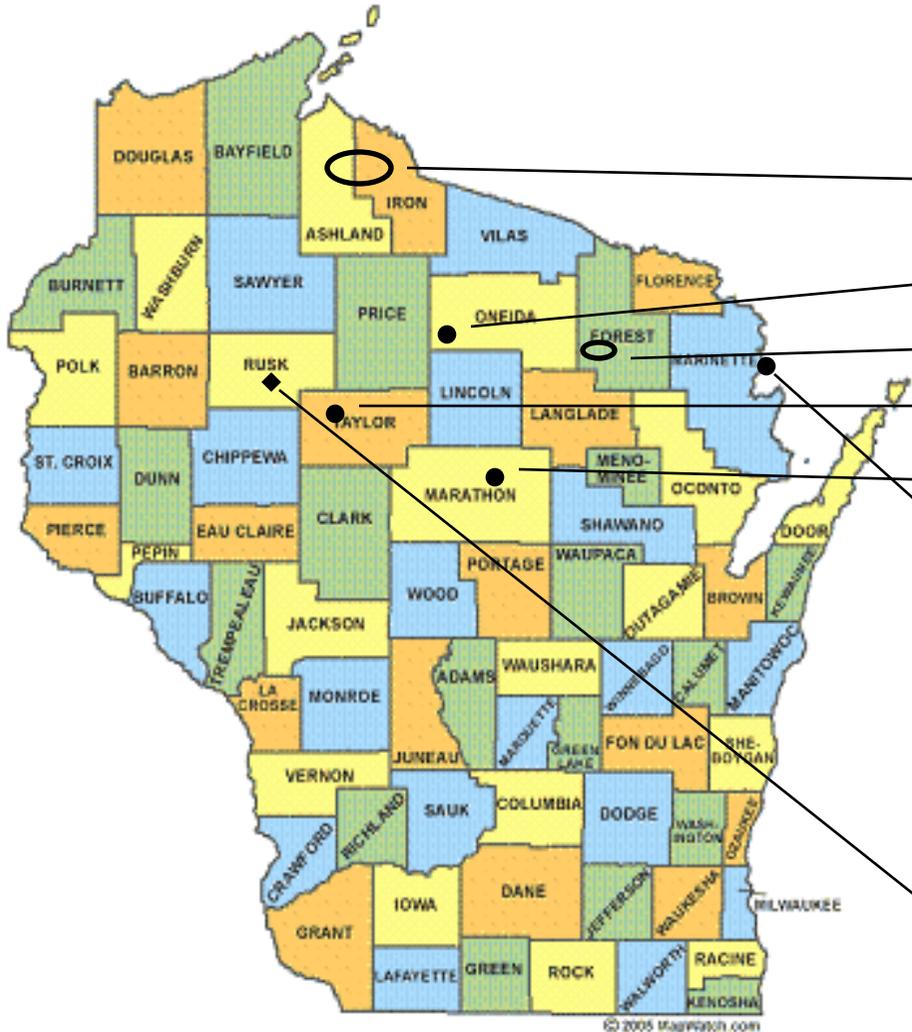
Reef Deposit, Town of Easton, WI

Marathon County Committee Meeting
February 27, 2018

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Bureau of Waste and Materials Management



Metallic Mineral Prospects



- Gogebic Deposit
- Lynne Deposit
- Crandon Deposit (inactive)
- Bend Deposit
- Reef Deposit
- Michigan Back 40
- Closed Flambeau Mine



Volcanogenic Massive Sulfide Deposits (VMS)

- Formed ~2.0 bya along an island arc complex
- Masses of metallic sulfides including copper, zinc, gold and silver
- Penokean Orogony metamorphosed and tilted deposits
- Reef Deposit is not a Volcanogenic Massive Sulfide (VMS) deposit; epigenetic

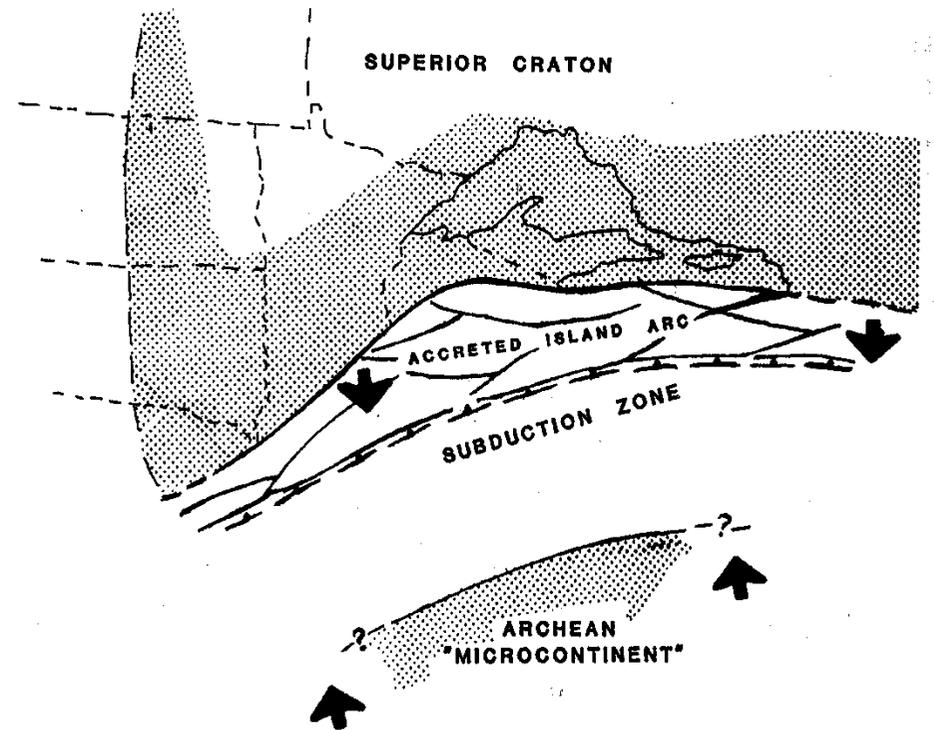
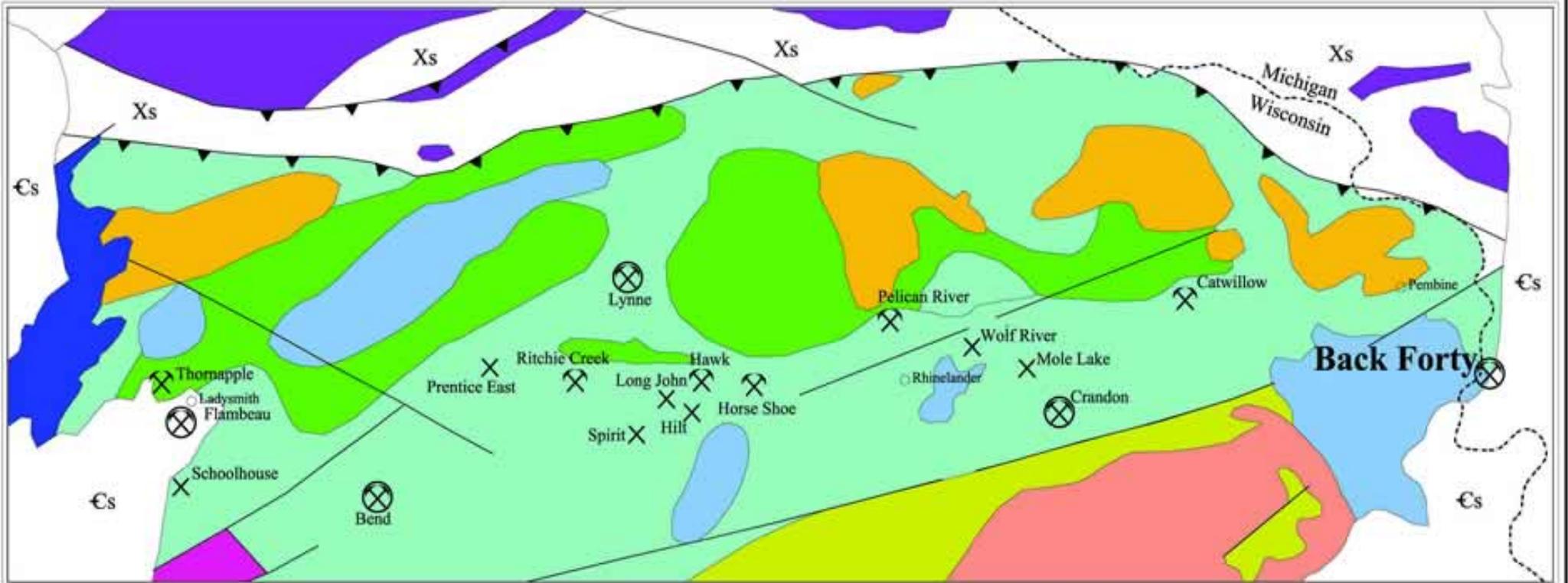


Figure 3-59: Sketch map showing general tectonic relationships as an Archean microcontinent converged on the Superior craton with the accreted Early Proterozoic island arc. Oceanic crust between the converging cratons was consumed in the subduction zone dipping beneath the accreted island arc.



PENOKEAN VOLCANIC BELT

- €s Paleozoic Sedimentary Rocks
- Anorogenic igneous rocks (1,470-1,510 Ma)
- Barron Quartzite

- Tonalite-granodiorite-granite (1,760-1,870)
- Gneiss and Granitoid rocks (1,835-1,865 Ma)

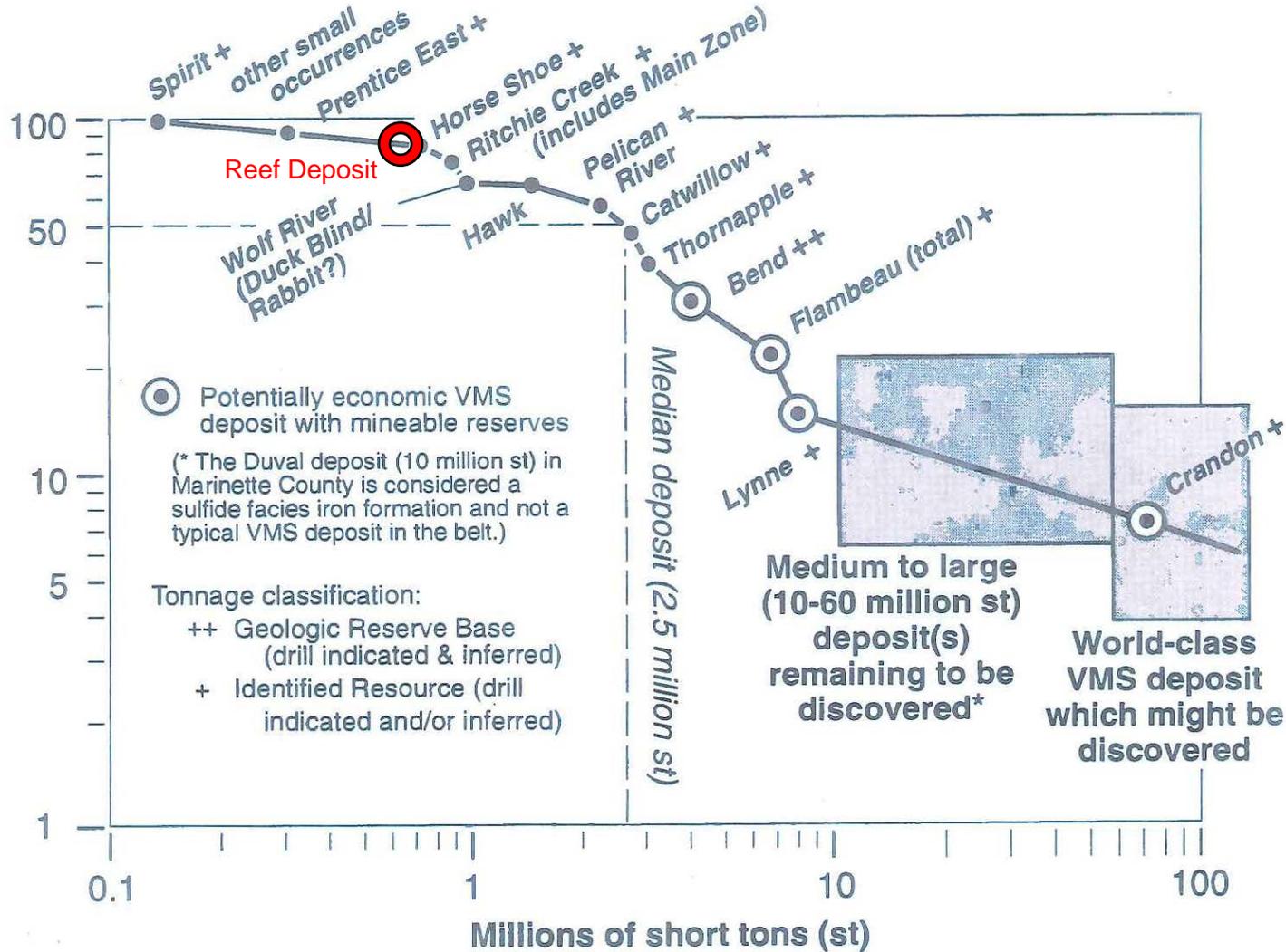
- Volcanic and lesser sedimentary rocks (1,840-1,880 Ma):**
- Ladysmith-Rhinelanders Volcanic Complex
 - Back arc basin sequence (greenschist succession)
 - Main volcanic arc sequence (amphibolite succession)
 - Wausau Volcanic Complex
 - Gneiss and schist (2,800-3,000 Ma): includes tonalite (1,890 Ma)

- Xs Marquette Range Supergroup (aprox 1,850-2,100 Ma)
- Gneiss (2,700-3,550 Ma)



- Potential economic VMS deposit
- VMS deposit
- VMS occurrence
- Thrust fault
- High-angle fault

How Does the Reef Compare?



Estimated Ore Reserves (ILSG Vol. 42, 1996)

Reef Deposit (Noranda)

450,000 tons

Bend Deposit

3.7 million tons

Flambeau Deposit

6-7 million tons

Lynne Deposit

6.7 million tons

Crandon Deposit

72.5 million tons





Reef Deposit, Marathon County

- Long known deposit of weathered sulfides containing significant gold tellurides and free gold
- Area east of Wausau in Town of Easton - gold exploration shaft developed in the 1920's, additional drilling in 1967 and again by Noranda in 1987
- Noranda drilled about 100 boreholes with 45,000 feet of core
- Determined that the gold mineralization was complex (shear zones and veins) and would require more drilling to prove reserves
- Options on the mineral and surface rights acquired by Aquila Resources in 2011



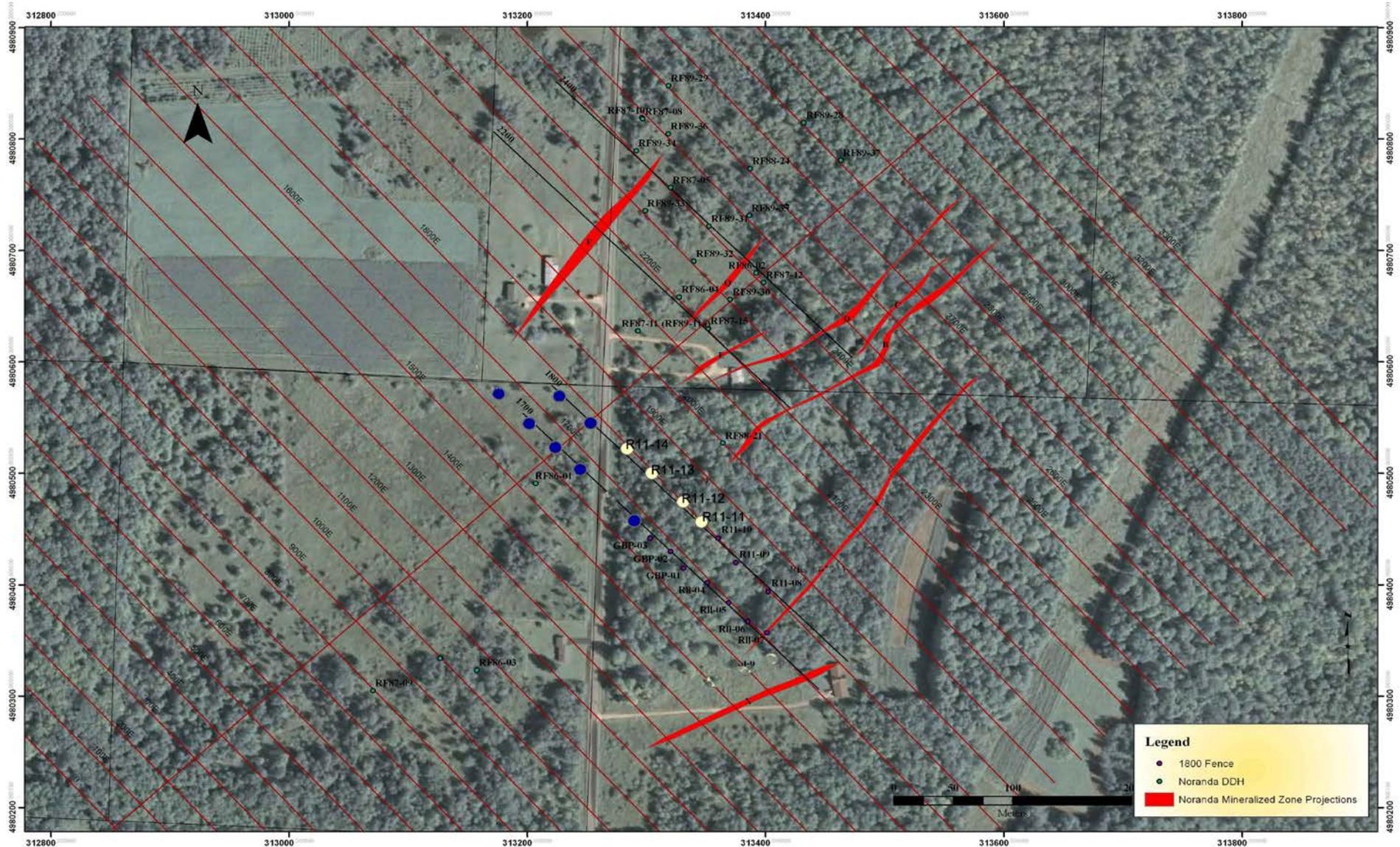


Noranda's Findings

- Found 7 quartz-sulfide gold-bearing mineralized zones on Reef Property
 - Sulfide veinlets containing gold, copper, silver
 - Estimated reserves of 120,000 ounces of gold
 - 454,688 tons of ore-bearing ore
 - Average min. zone is 8 feet thick, 700 feet long over strike, surface to ~450 feet deep
 - Zones are open to the north and at depth; Wolf River Batholith to east



Mineralized Zones





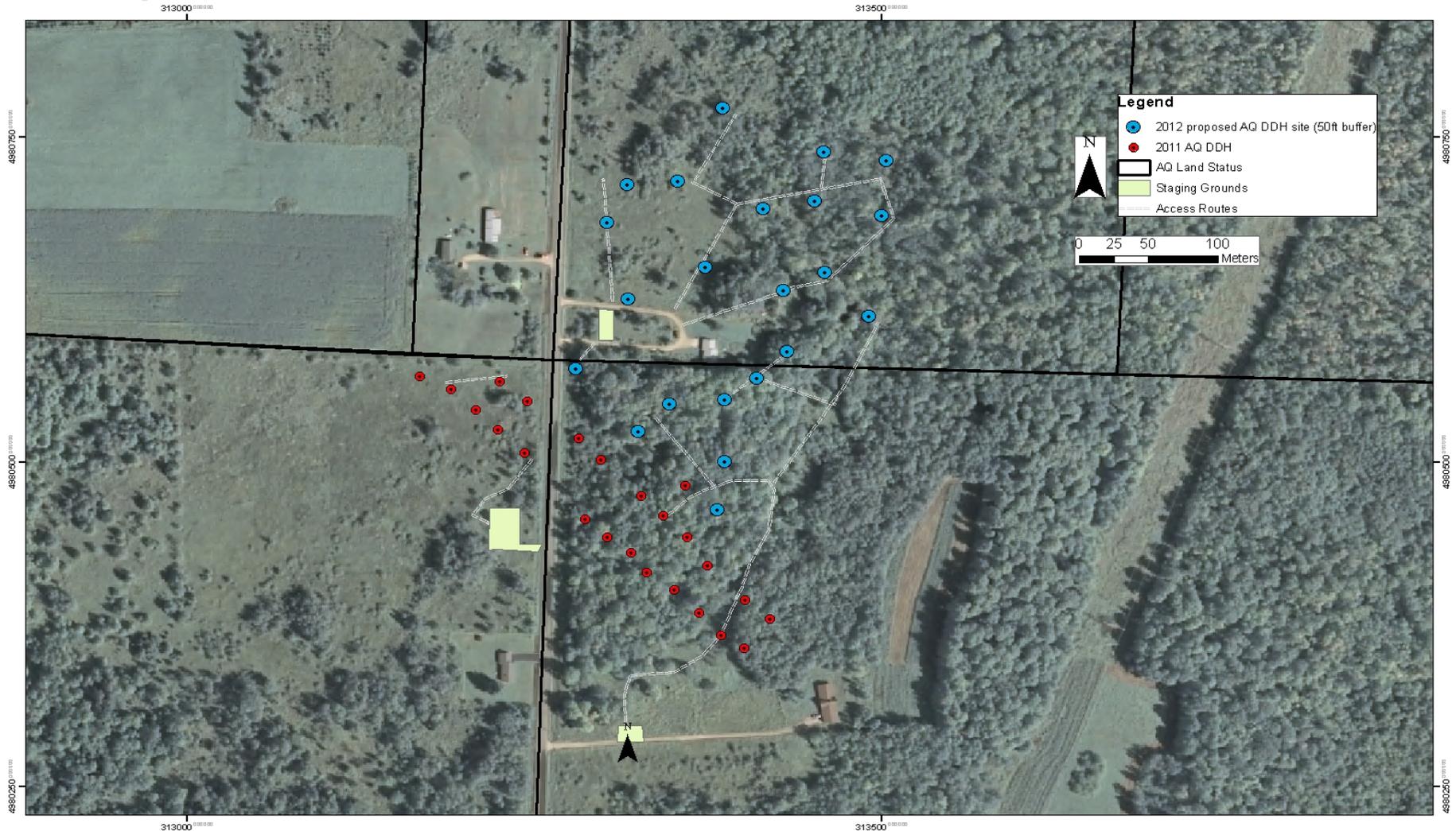
Aquila Resources

- Conducted a drilling operation at Reef Property 2011-2012
 - Completed 17 boreholes in summer 2011
 - Completed 18 more boreholes in winter of 2012
 - Wetland areas could only be drilled in winter to prevent impacts; no ACOE or DNR permits
 - All drill sites reclaimed; drill fluid and cuttings were disposed off-site



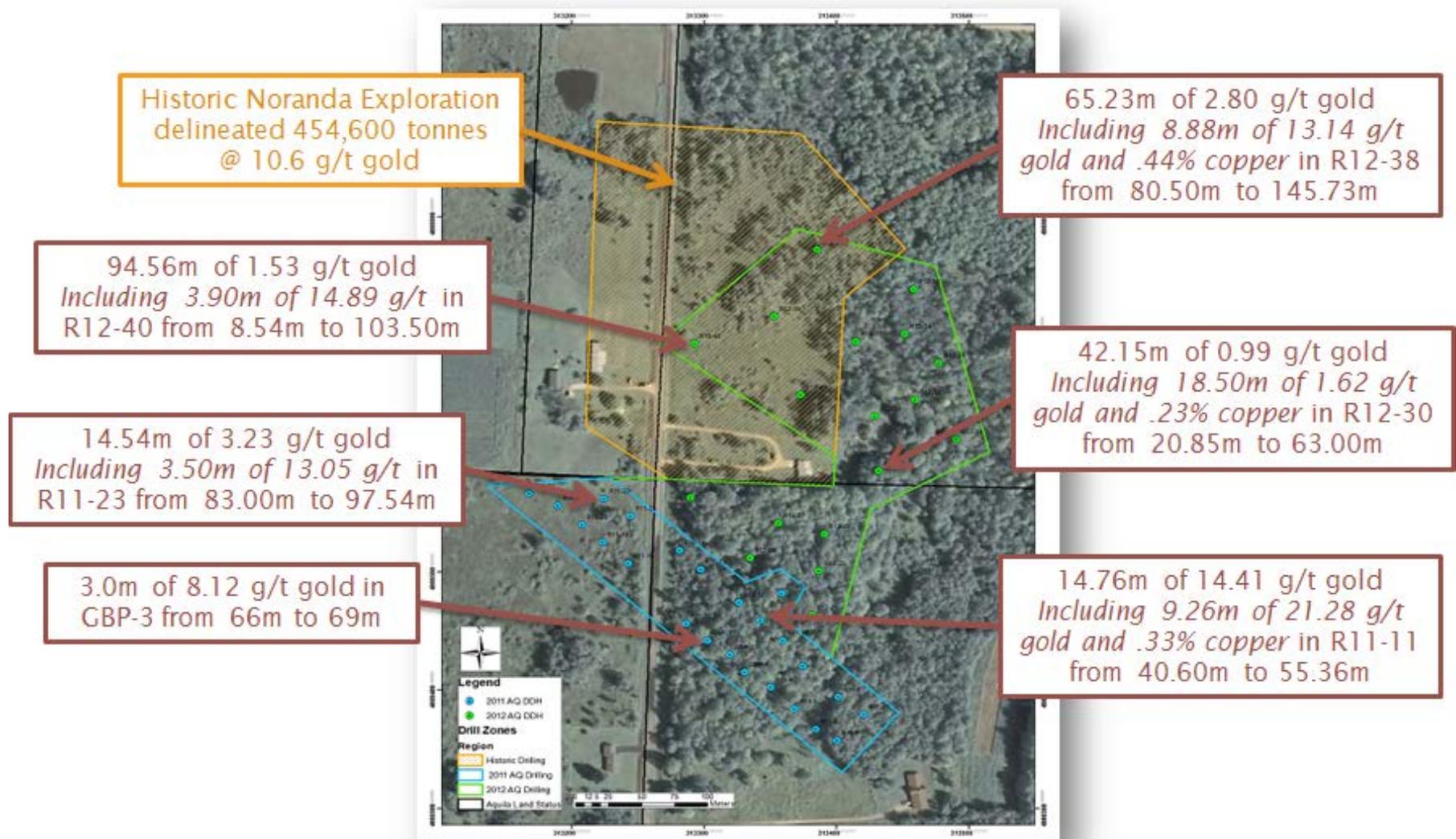
Reef Drilling Plan 2011-2012

Reef Project Site

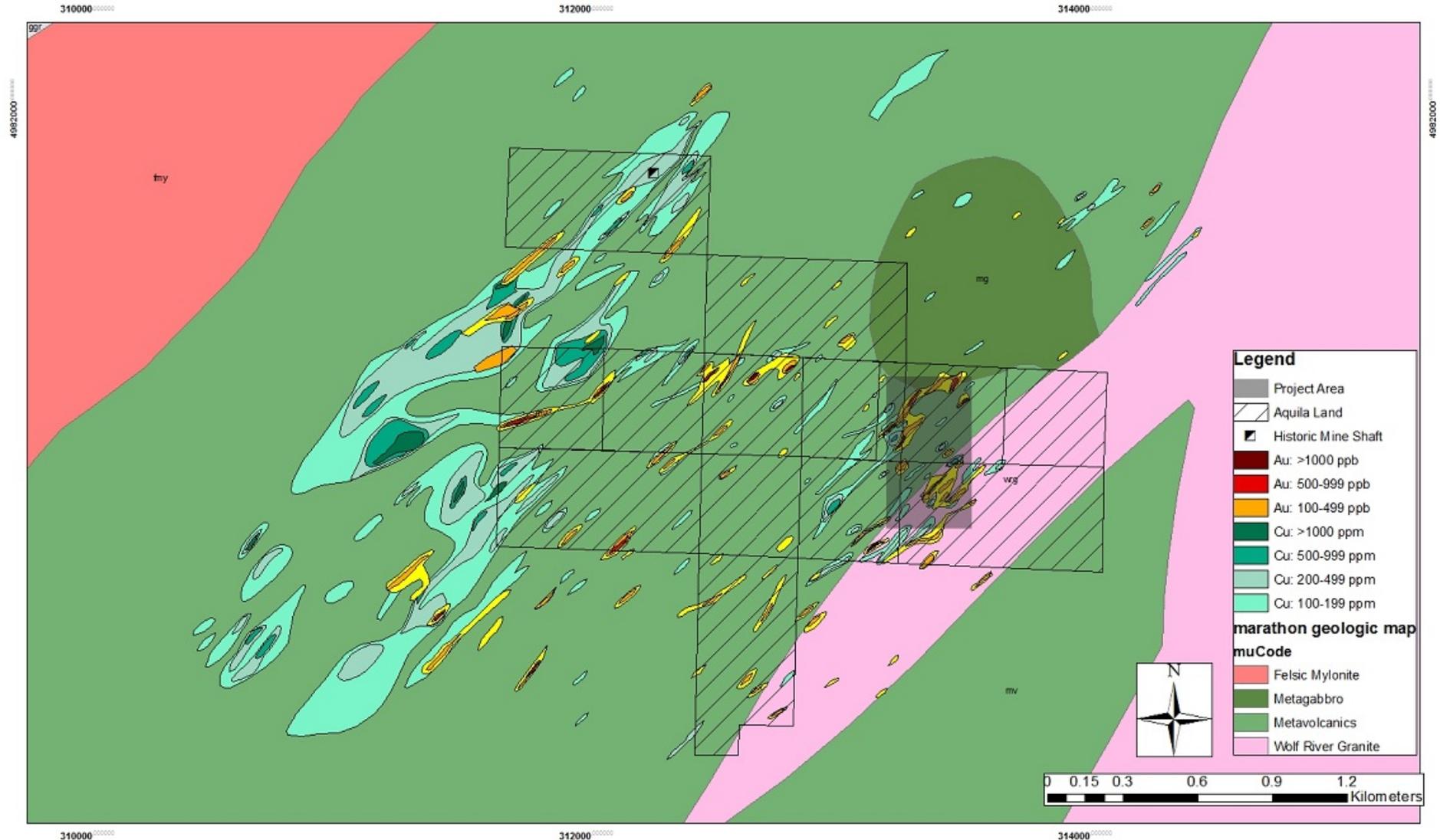




Aquila Findings



Aquila Findings





Status

- Reef Project
 - Aquila Resources has allowed their exploration license to lapse
 - Drilling completed in 2012
 - All drill sites have been reclaimed; 3 boreholes were left open (but secured), the rest were filled with grout
 - Project was suspended when exploration funds ran out; on hold until additional funding is secured



Questions?

